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AVW211

922 MHz Wireless 2-Channel Vibrating Wire Analyzer Module

Greatly Reduces Signal Noise

Includes built-in radio

Overview

The AVW211 is a vibrating wire analyzer module that includes an internal 920 to 928 MHz spread-spectrum radio for wireless communication, typically used in Australia and New Zealand. With this vibrating wire analyzer module, your data logger can measure vibrating wire strain gages, pressure transducers, piezometers, tiltmeters, crackmeters, and load cells. These sensors are used in a wide variety of structural, hydrological, and geotechnical applications because of their stability, accuracy, and durability.

Benefits and Features

- Provides better measurements by significantly reducing incorrect readings caused by noise sources
- Interfaces two vibrating wire sensors; more sensors may be connected if an AM16/32B multiplexer is used
- Self-checking diagnostics give continual feedback on sensor condition
- High resolution—less than 0.001 Hz (industry standard is 0.1 Hz)
- Low current drain
- Remote, wireless operation with on-board radio
- Interfaces both temperature and frequency measurements from vibrating wire sensors

Detailed Description

The AVW211 uses vibrating wire spectral-analysis technology (VSPECT™). VSPECT observes the incoming sensor signal, performs a Fourier transform and a spectral analysis (transforming the time series into individual sinusoidal components in the frequency spectrum), and determines the sensor frequency by identifying the largest signal in the acceptable range while filtering out environmental and electrical noise.

The AVW211 analyzer module also provides many self-checking diagnostics such as vibrating element signal strength, signal-to-noise ratio, vibrating element signal decay ratio, and incorrect signal response. These diagnostics can be running in the background to give continual feedback of the condition for each sensor.

The AVW211 typically transmits its data to an RF411A spread-spectrum radio that is connected to the data logger. The AVW211 can also be connected directly to the data logger.

Specifications

-NOTE-	*Electrical specifications are valid over a -25° to +50°C range unless otherwise specified. Non-condensing environment required.*
Internal Radio Frequency Range	920 to 928 MHz
Radio Power	250 mW Older AVW211 analyzer modules (serial # < 11676) have 100 mW radios.
Number of Vibrating Wire Sensors Measured	Up to 2 vibrating wire sensors can be connected to the analyzer module. Additional sensors can be measured by using an AM16/32-series multiplexer.
Power Requirements	9.6 to 16 Vdc
Analog Input/Outputs	2 differential (DF) vibrating wire measurements (V+ and V-) and 2 single-ended (SE) ratiometric resistive half-bridge measurements (T+ and T-) for vibrating wire sensor's onboard temperature sensor.
Digital Control Ports	3 digital control ports (C1 – C3) › C1 functions as an SDI-12 I/O communication port. › C2 functions as a Clk output for multiplexer control. › C3 functions as a Reset output for multiplexer control.
RS-232 Port	1 9-pin RS-232 port (for connecting to a data logger COM port)
Measurement Resolution	0.001 Hz RMS (±250 mV differential input range; -55° to +85°C)
Measurement Accuracy	±0.013% of reading (±250 mV differential input range; -55° to +85°C)
Input Voltage Range	±250 mV (differential) for vibrating wire inputs
Common Mode Range	±25 V
Baud Rates	Selectable from 1200 to 38.4 kbps (ASCII protocol is one start bit, one stop bit, eight data bits, and no parity.)
Memory	› Either 128 or 512 kB of SRAM › 2 MB of OS Flash
CE Compliance Standards to which Conformity Is Declared	EC61326:2002
Dimensions	21.6 x 11.18 x 3.18 cm (8.5 x 4.5 x 1.2 in.)
Weight	0.43 kg (0.95 lb)

Typical Current Drain @ 12 Vdc

Quiescent, Radio Off	~0.3 mA
Radio Duty Cycling 1 s	~3 mA (includes quiescent current)
Radio Always On	~26 mA (radio transmit current 100 mA)
Active RS-232 Communication	~6 mA (3 s after communication stops, the current will drop to the quiescent current)
Measurement	~25 mA (averaged over the 2 s)

For comprehensive details, visit: www.campbellsci.com/avw211

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